Abu Dhabi Blue Carbon and Ecosystem Services

Lessons Learnt and Findings

October 2014

Ecosystems Studied

Seagrass meadows

Saltmarshes

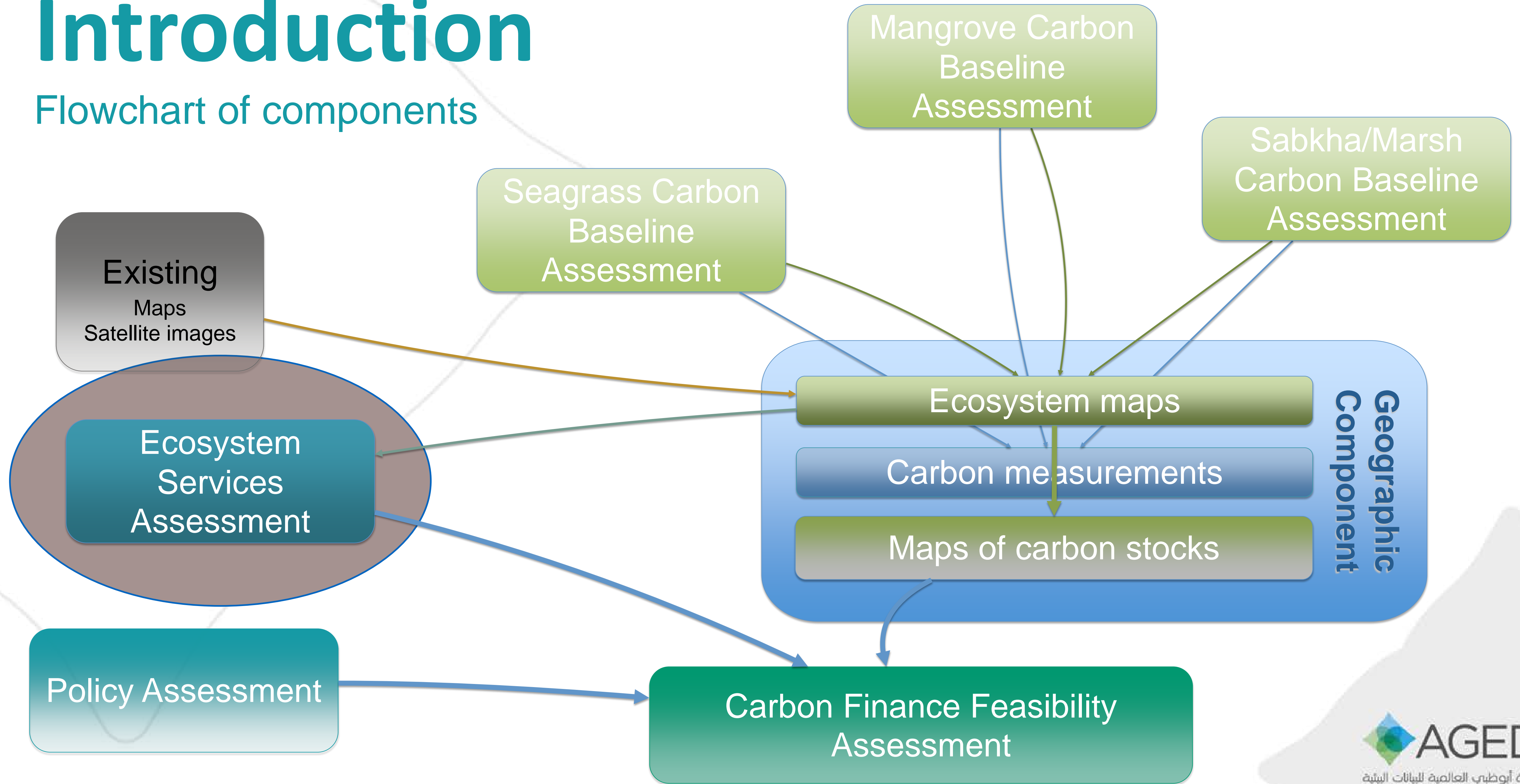Intertidal cyanobacterial mats

Coastal Sabkha

Mangroves

Introduction
Flowchart of components

Mangrove Carbon Baseline Assessment

Sabkha/Marsh Carbon Baseline Assessment

Seagrass Carbon Baseline Assessment

Existing
Maps
Satellite images

Ecosystem Services Assessment

Geographic Component

Ecosystem maps

Carbon measurements

Maps of carbon stocks

Policy Assessment

Carbon Finance Feasibility Assessment

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Ecosystem services

Particularly relevant ecosystem services in Abu Dhabi

- Shoreline and channel stabilisation

- Water quality maintenance

- Fisheries production

- Support to biodiversity, ecotourism and recreation
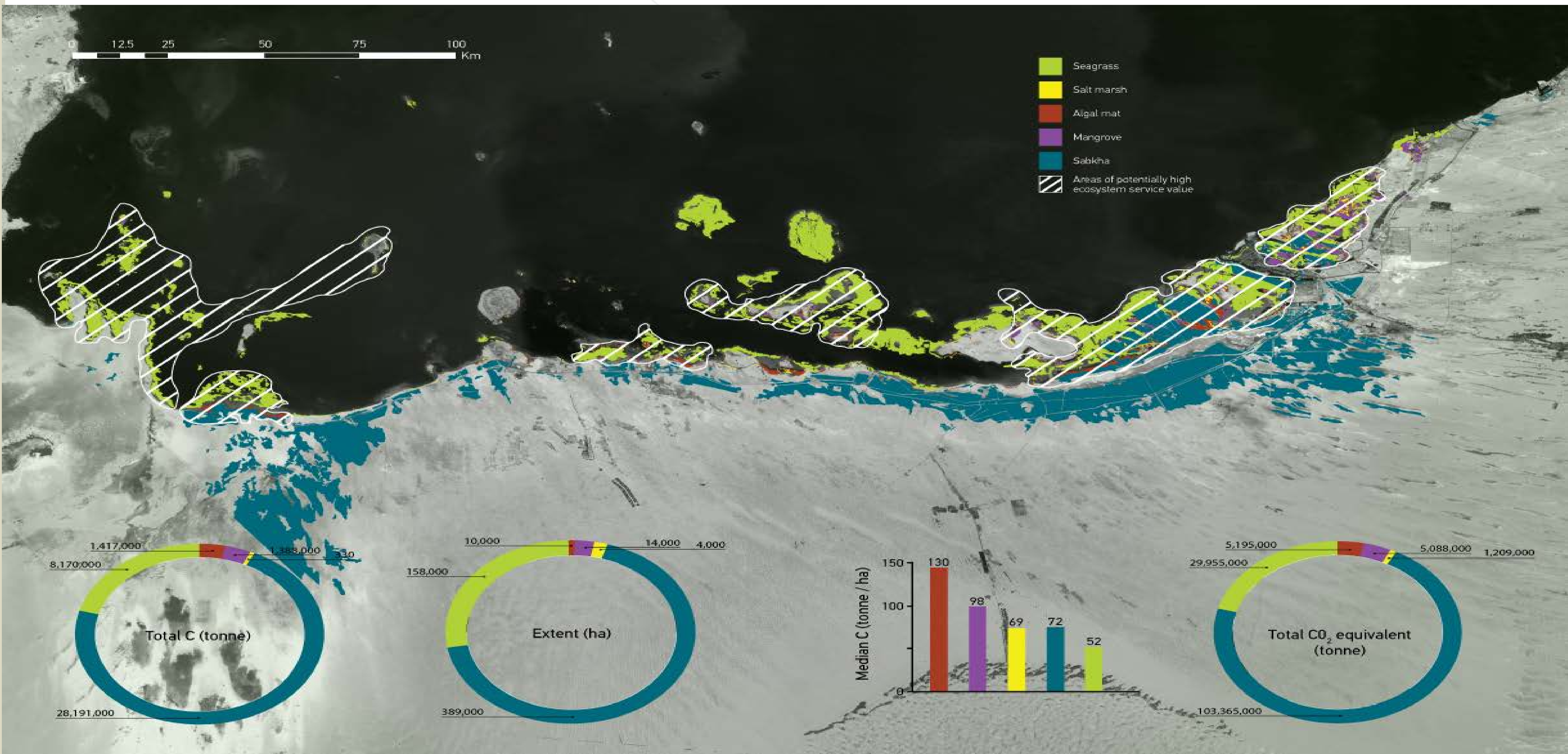
- Cultural and social values

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Habitat Validation Protocol

- **Allow practitioners to score variability in service provisioning capacity per habitat per region**.

- A methodology that can provide a rapid assessment of habitat condition, quality, and ecological integrity;
- Scoring per habitat that will be used to qualify the capacity of different sites and areas to provide ecosystem services;
- An assessment that can help to identify impacted or compromised habitat
- Management recommendations to improve the conditions of specific habitat attributes that maintain ecosystem function and provisioning of services.
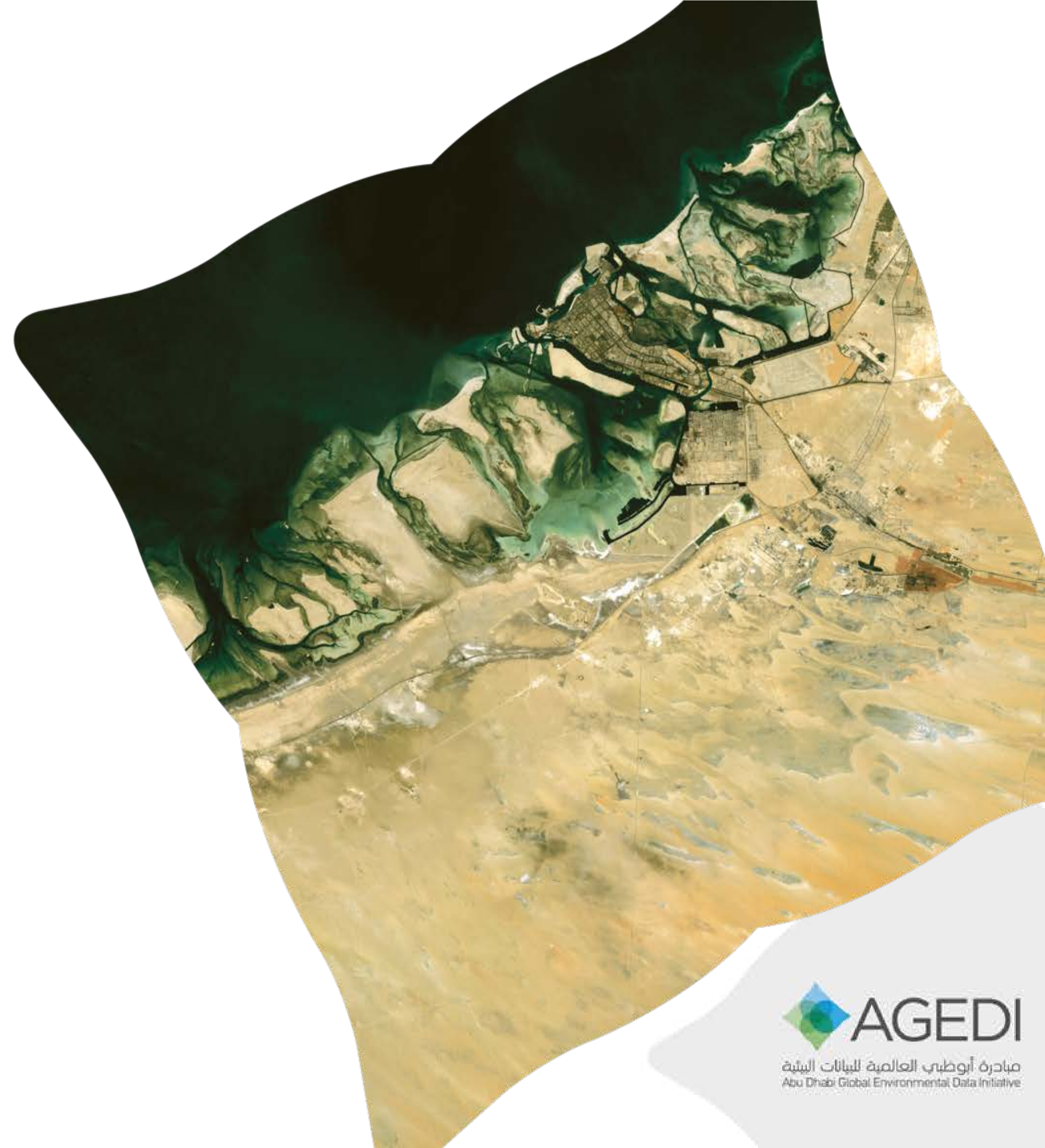
Highest concentration of ecosystem services beyond BC

Financial options

Finding feasible financial mechanisms

Ecosystem Services
- Economic value of Protected Areas established, over 25 years
    - ≈ US$ 2,000,000,000

- Protected Area Costs
    - ≈ US$ 700'000'000
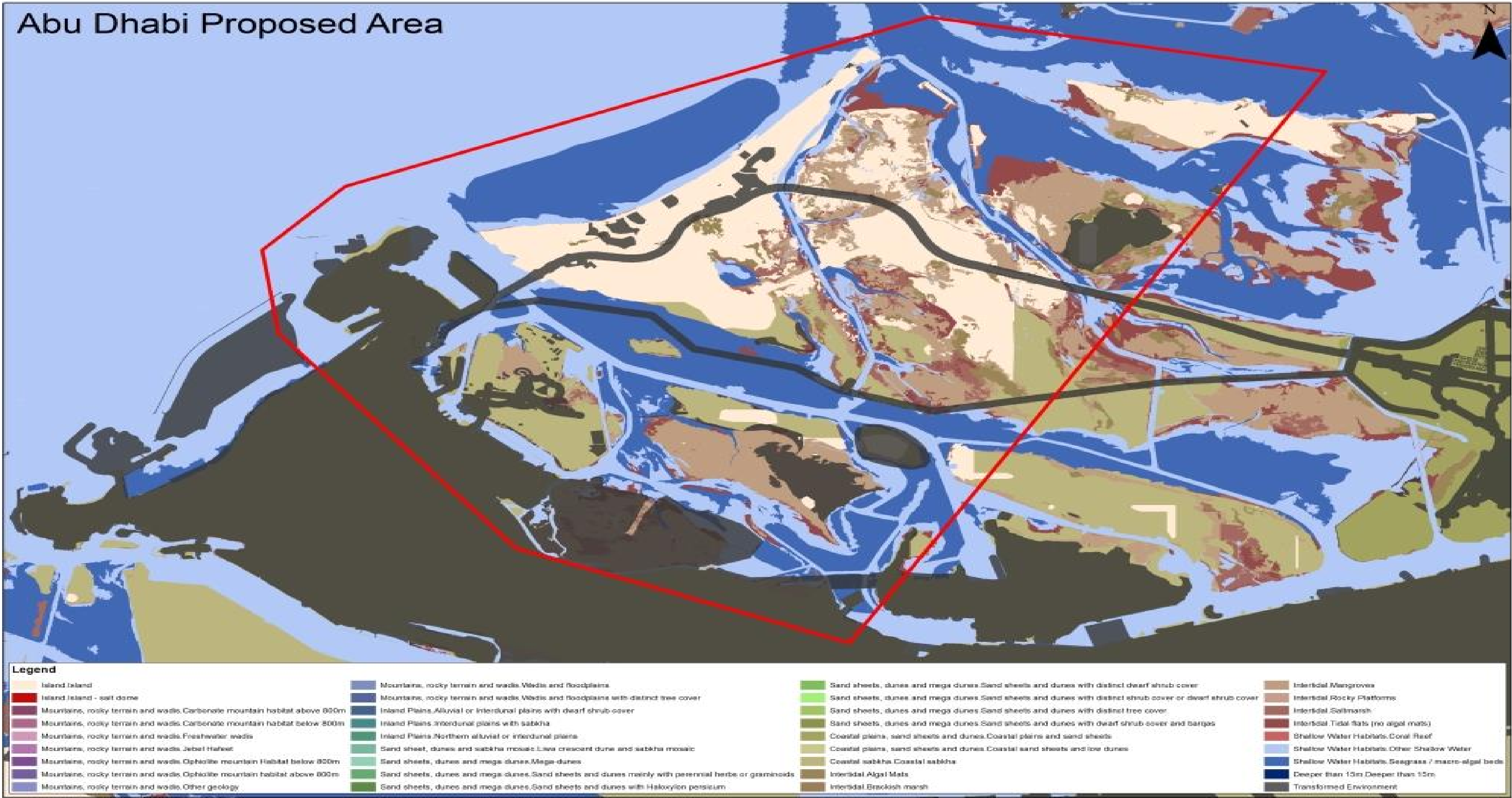
Strong case for conservation.

Abu Dhabi Associated Blue Carbon Ecosystem Services Contingent Valuation Project
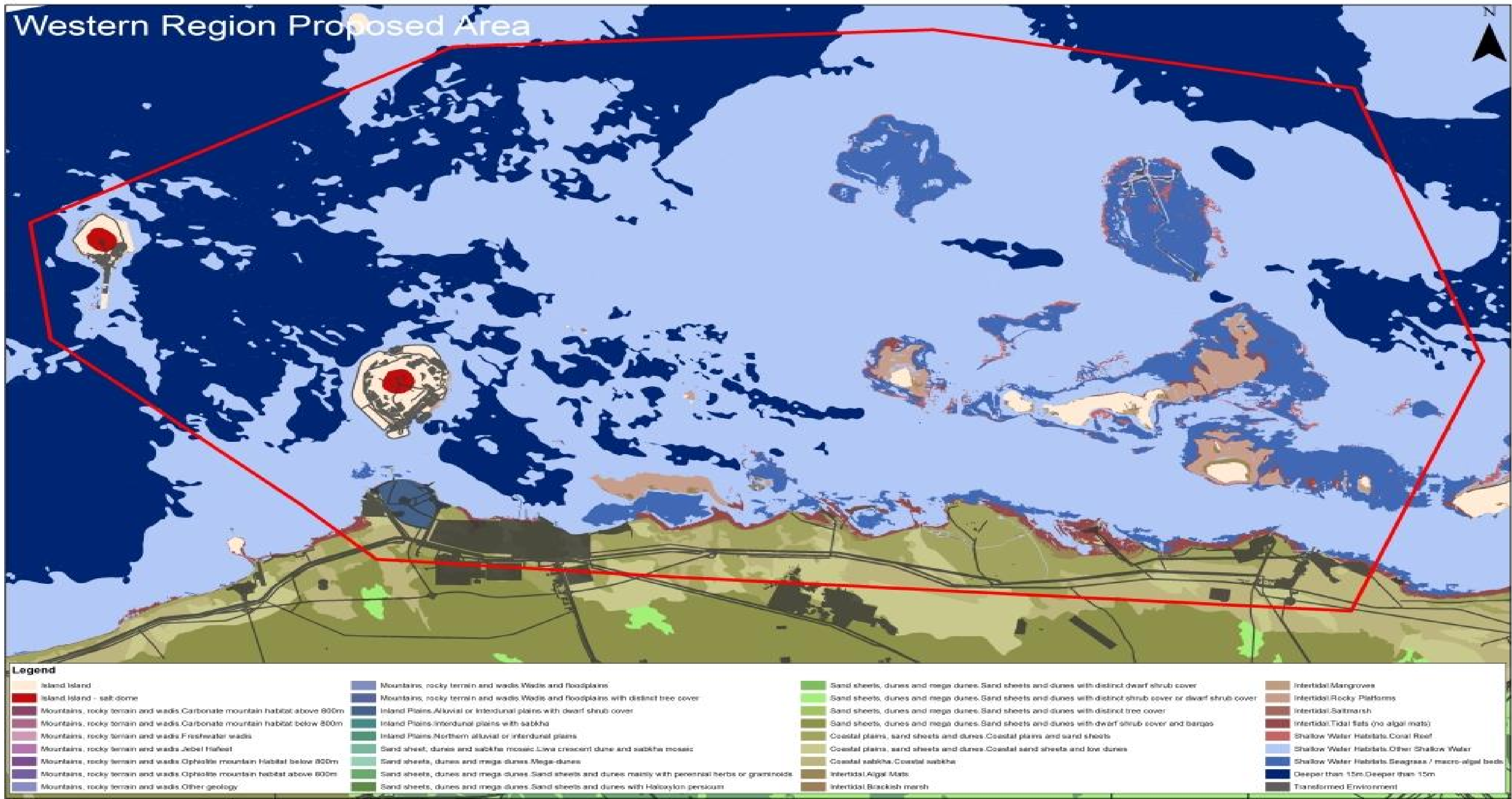
The Objective: provide further localized valuation of associated blue carbon ecosystem services within two study areas to better inform management decisions.

- Timeframe of the project is 18 weeks from mid-August to Dec 31st 2014.

- The project will be implemented by a project team from Hyder's Abu Dhabi office. Supported by natural resource economists from Futureworks Sustainability Consultancy: Myles Mander and Professor James Blignaut.

- Peer review of the Ecosystem Services Assessment Report will be undertaken by Dr. Tundi Agardy.
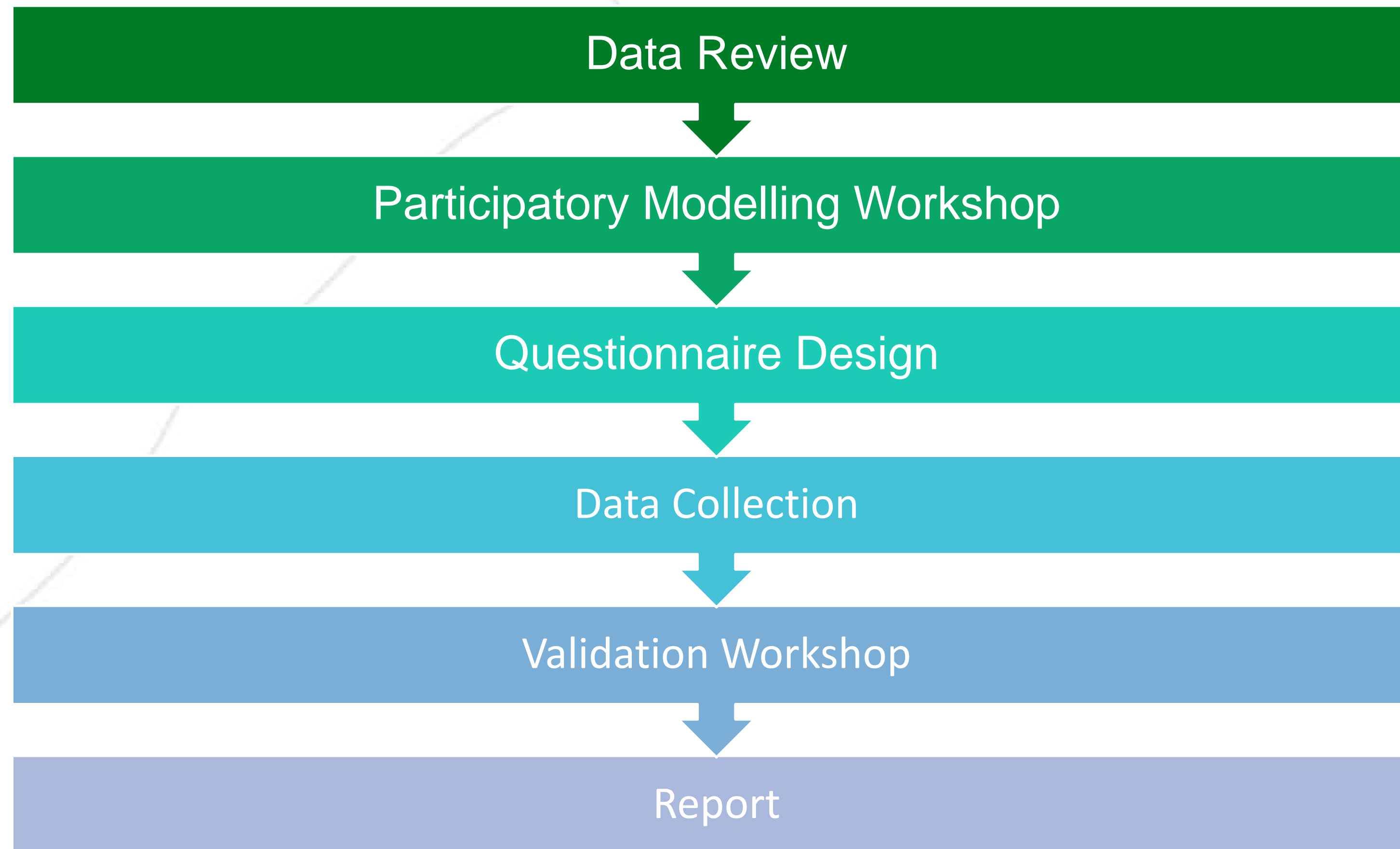
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The Abu Dhabi City Study Area (red line boundary)

The Western Region Study Area (red line boundary)

Project Structure

Workshop approach..

Review habitat assets

Agree ecosystem services by habitat

Agree the beneficiaries of ecosystem services

What the future holds

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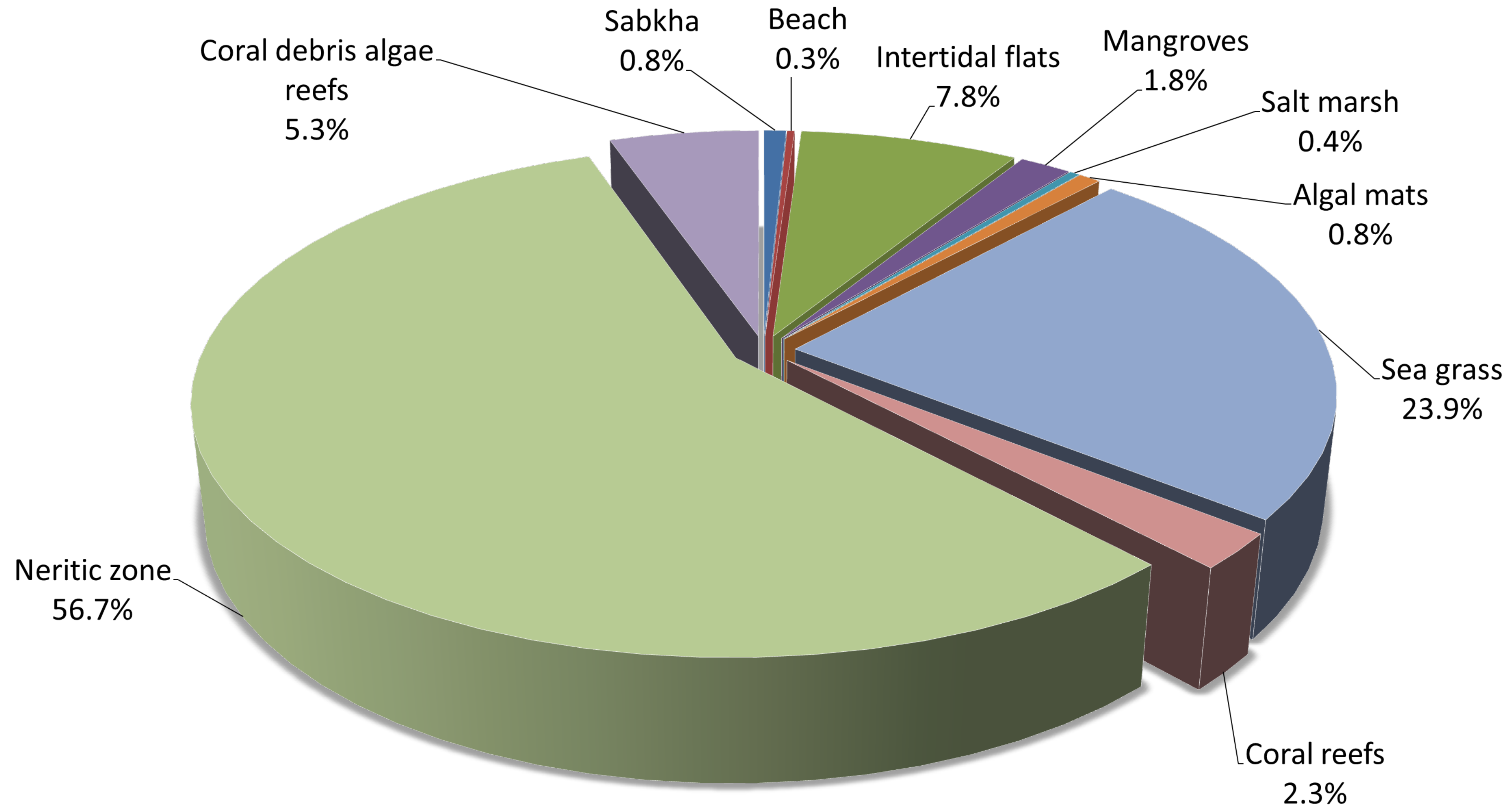
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Relative Area of Habitat Assets within the Combined Study Areas

Land Cover Types Showing Existing and Possible Future Condition and Size

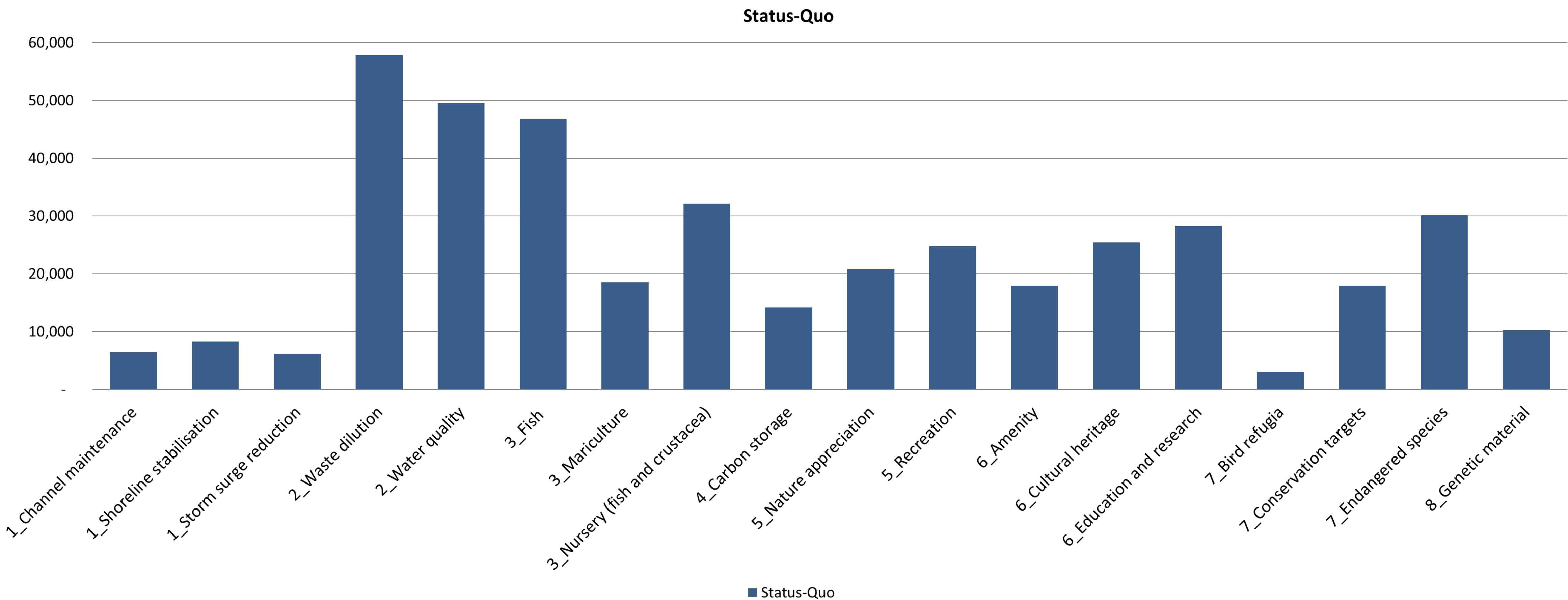| Status-Quo										
ECOLOGICAL ASSETS	Sabkha	Beach	Intertidal flats	Mangroves	Salt marsh	Algal mats	Sea grass	Coral reefs	Neritic zone	Coral debris algae reefs
Ecological condition - score relative to its potential - 4 to 0	1.8	2.3	2.7	3.2	2.2	2.6	2.6	2.1	2.8	2.0
Size - area in km²	14.8	5.0	146.2	34.6	6.8	14.8	450.2	43.5	1067.4	100.0
Percentage of total	0.8%	0.3%	7.8%	1.8%	0.4%	0.8%	23.9%	2.3%	56.7%	5.3%
Landscape context - score 0 to 4 (major regional ecological linkages = 4)	2.3	2.7	3.0	2.7	2.0	3.0	3.3	2.3	3.3	2.7
OVERALL FUNCTIONALITY	44	21	750	200	24	72	2 341	156	5 930	360
Scenario 1 - 2030 Likely future										
Ecological condition - score relative to its potential - 4 to 0	1.5	2.0	2.7	3.0	2.0	2.6	2.0	1.0	1.8	2.0
Size - area in km2	10.3	6.3	119.5	52.0	3.4	14.8	360.2	15.0	1067.4	128.5
Percentage of total	0.6%	0.4%	6.7%	2.9%	0.2%	0.8%	20.3%	0.8%	60.1%	7.2%
Landscape context - score 0 to 4 (major regional ecological linkages = 4)	2.33	2.67	3.00	2.67	2.00	3.00	3.33	2.33	3.33	2.67
OVERALL FUNCTIONALITY	26	23	613	281	11	72	1 441	26	3 843	463
Scenario 2 - 2030 Elevated management										
Ecological condition - score relative to its potential - 4 to 0	1.8	3.0	2.7	3.2	2.2	2.6	3.0	3.0	2.8	0
Size - area in km2	14.8	5.0	146.2	52.0	6.8	14.8	450.2	143.5	1067.4	0.0
Percentage of total	0.8%	0.3%	7.7%	2.7%	0.4%	0.8%	23.7%	7.5%	56.2%	0.0%
Landscape context - score 0 to 4 (major regional ecological linkages = 4)	2.33	2.67	3.00	2.67	2.00	3.00	3.33	2.33	3.33	0
OVERALL FUNCTIONALITY	44	27	750	299	24	72	2701	732	5930	0

Ecosystem Services Supply Potential per Habitat Asset in Pristine Condition

ECOSYSTEM SERVICES	Sabkha	Beach	Intertidal flats	Mangroves	Salt marsh	Algal mats	Sea grass	Coral reefs	Neritic zone	Coral debris algae reefs
1_ Channel maintenance	0	0	0	4	2	1	2	1	0	2
1_ Shoreline stabilisation	1	1	2	4	3	2	2	2	0	2
1_ Storm surge reduction	3	4	2	3	3	1	1	2	0	2
2_ Waste dilution	0	0	1	2	1	2	3	3	4	3
2_ Water quality	1	1	3	3	2	4	4	2	3	3
3_ Fish	0	1	2	2	0	0	3	4	3	3
3_ Mariculture	0	0	1	0	0	0	0	0	3	0
3_ Nursery (fish and crustacea)	0	1	3	4	0	3	4	4	3	3
4_ Carbon storage	3	0	2	3	2	4	2	2	1	2
5_ Nature appreciation	1	2	3	4	2	1	2	4	2	1
5_ Recreation	0	4	1	3	0	0	2	3	3	1
6_ Amenity	0	4	3	3	1	1	1	2	2	1
6_ Cultural heritage	1	3	2	3	1	1	2	2	3	1
6_ Education and research	3	4	2	4	2	2	3	3	3	1
7_ Bird refugia	1	2	3	3	2	1	0	0	0	0
7_ Conservation targets	1	4	3	3	3	3	3	4	1	3
7_ Endangered species	2	3	2	1	1	2	4	4	3	1
8_ Genetic material	1	1	1	1	1	2	1	3	1	1

Findings

Relative Ecosystem Service Levels for the Status Quo
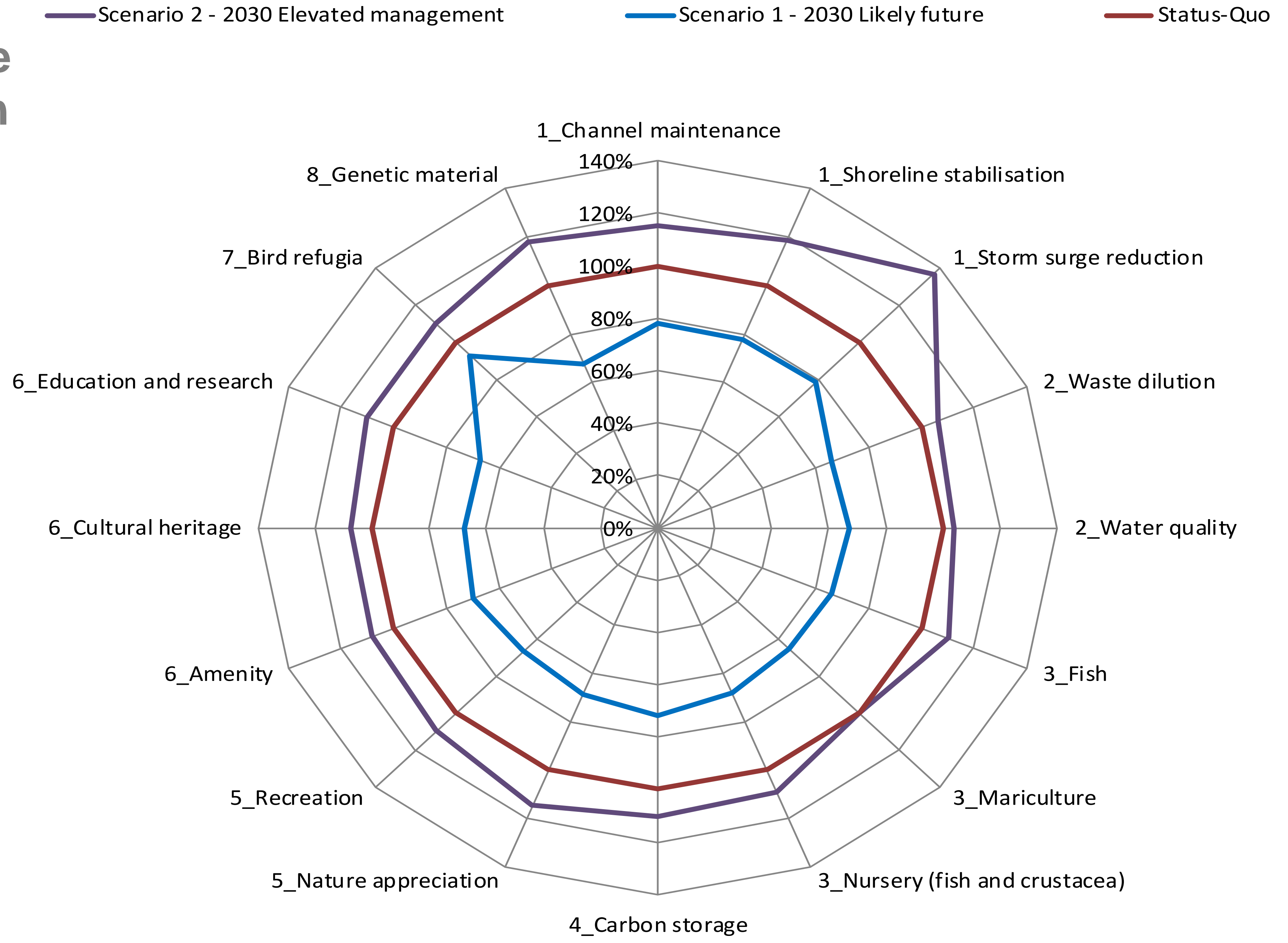
(Cont.) Findings

Future scenarios

Scenario 1: 2030 Likely Future

Scenario 2: 2030 Natural Capital Restoration or 'Elevated Management'

Percentage Change in Service Levels in Two Future Scenarios

Next steps...

Carefully targeted questionnaires

Valuation Analysis

Validation Workshop

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